REMARKS

With the entry of the present Amendment, Claims 6-21 and 23-26 remain in this application. Of these, Claims 21 and 23 are withdrawn from consideration as drawn to a non-elected invention. Claims 8, 9, 10, 12, 14, 16, 20 have been amended to more particularly describe the present invention. No new matter has been added.

In the Office Action dated January 30, 2003, the specification was objected to for failing to provide proper antecedent basis for the subject matter of Claims 25 and 26. It is believed that the present amendment to page 3 of the specification obviates this objection. Support for this amendment, and for the subject matter of Claims 25 and 26, is found in the application as filed at, for example: p. 16, lines 25-26 and Fig. 9, which describes a magnetic field sensor having a field sensitivity of approximately 5 mV RMS output signal per Oe of applied magnetic field; p. 17, lines 2-4 and Fig. 10, which describes a magnetic field sensor having a field sensitivity of 20 mV RMS output signal per Oe of applied magnetic field; and p. 3, lines 2-4, which states that the magnetic field sensor has a field sensitivity larger than 10 Mv/Oe.

Claims 8-10, 12, 14-20, and 24-26 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,675,252 to Podney ("Podney"), and Claims 6-7, 11, and 13 were rejected under 35 U.S.C. §103 as being obvious over Podney. With the entry of the present amendment, it is believed that these rejections are overcome, and all claims are in condition for allowance.

More specifically, independent Claim 8 has been amended to recite a magnetic field sensor comprising a magnetostrictive material in contact with a piezoelectric material, and configured such that, when the magnetostrictive material is subjected to an alternating magnetic field, a change in at least one dimension of the magnetostrictive material induces a strain in, and produces a detectable voltage signal in, the piezoelectric material, and wherein during operation the magnetic field sensor does not consume any external electrical power; and wherein the magnetic field sensor comprises a multilayer structure having a single layer of a first one of the magnetostrictive and piezoelectric material, and at least one layer of the second one of the magnetostrictive and piezoelectric materials.

The invention as recited in Claim 8 is thus directed to multilayer magnetic field sensors having *a single layer* of either a magnetostrictive or a piezoelectric material, and *one or more layers* of the other material. Examples of devices according to amended Claim 8 are shown, for example, in Fig. 1A (one layer of magnetostrictive material and one layer of piezoelectric material), Fig. 1B (one layer of magnetostrictive material sandwiched between two layers of piezoelectric material), Fig. 1C (one layer of piezoelectric material sandwiched between two layers of magnetostrictive material, and Fig. 3 (one magnetostrictive substrate layer and a patterned layer of piezoelectric material). As described in the Specification, these multilayer magnetic field sensors are characterized by high field sensitivity and wide dynamic range, they do not consume external electrical power, and they can be mass produced at low cost. (See p. 2, line 24 through p. 3, line 16).

The cited Podney reference teaches a vastly different and much more complex "composite structure" having numerous "interleaved layers" of magnetostrictive and piezoelectric materials. Podney teaches that one "element" of the device comprises a single magnetostrictive layer bonded to a single piezoelectric layer, and that each "composite structure" is made up of "stacks" of such elements. Thus, each sensor device in Podney includes plural magnetostrictive *and* piezoelectric material layers.

Podney fails to teach or suggest the efficient and inexpensive magnetic field sensor of Claim 8, in which the structure includes *a single layer* of either a magnetostrictive or a piezoelectric material, and *one or more layers* of the other material. In fact, Podney teaches away from this design, by teaching that multiple composite structures, each comprising both magnetostrictive and piezoelectric layers, should be stacked and connected in parallel for increased sensitivity. (See, col. 4, lines 36, 56-58). For example, the preferred embodiment of Podney comprises 100 piezoelectric layers sandwiched between alternating magnetostrictive layers in a single stack that is 201 layers thick. In the other disclosed embodiment, four composite structures each include a stack of 51 alternating magnetostrictive and piezoelectric layers. Podney in no way teaches or suggests the efficient and low-cost magnetic field sensor of the present invention.

Since the cited reference fails to teach or suggest the magnetic field sensor of Claim 8, the Examiner's rejections are overcome, and independent Claim 8 and its dependants, Claims 6-7, 9-20, and 24-26, should be allowed.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned at (978) 341-0036.

Respectfully submitted,

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